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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/822,531	03/30/2001	Eric James Pressman	RD-26,589	1091

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GENERAL ELECTRIC COMPANY
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EXAMINER

STOCKTON, LAURA LYNNE

ART UNIT	PAPER NUMBER
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1626

DATE MAILED: 11/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/822,531	Applicant(s) PRESSMAN ET AL.	
	Examiner Laura L. Stockton, Ph.D.	Art Unit 1626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,6-44 and 47-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,6-44 and 47-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-3, 6-44 and 47-56 are pending in the application.

The rejection of the claims over Shalyaev et al. {U.S. Pat. 6,566,295} has been withdrawn since the reference was disqualified as prior art based on Applicants' statement that the reference and the invention of the instant application was commonly owned at the time the present invention was made.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 6-44 and 47-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buysch et al. {U.S. Pat. 5,856,554}, Buysch et

al. {U.S. Pat. 6,548,445} and Hesse et al. {WO 00/37419}, each taken alone or in combination with each other or each in view of the teachings in Mizukami et al. {U.S. Pat. 5,380,907} or Pressman et al. {U.S. Pat. 6,114,564}. Since WO 00/37419 is in a non-English language, the U.S. equivalent, U.S. Pat. 6,605,191, will be referred to hereinafter.

Determination of the scope and content of the prior art (MPEP §2141.01)

Applicants claim a process for the production of diaryl carbonates (e.g., diphenyl carbonate) by the reaction of an aromatic hydroxy compound (e.g., phenol), with carbon monoxide and oxygen in the presence of a catalyst composition consisting essentially of, and any reaction products thereof, a Group 8, 9 or 10 metal or compound thereof (e.g., a palladium source), at least one salt (e.g., sodium bromide or tetrabutylammonium bromide) and at least one metal co-catalyst (e.g., copper, titanium, cobalt, manganese, etc.) and where the reaction is commenced at a temperature sufficient to keep the aromatic hydroxy compound molten (e.g., ultimate reaction temperatures are in a range of between about 50 °C and about 150 °C - see page 17, paragraph [0046])

of the instant specification). Further, the reaction is performed under various other conditions, such as when the temperature or pressure is increased, when the CO (carbon monoxide) and O₂ (oxygen) is mixed, and when CO and O₂ is introduced, etc.

Each of the above cited prior art references teaches a process for preparing diaryl carbonates.

Buysch et al. '554 teach a process for the production of diaryl carbonates {e.g., diphenyl carbonate –DPC} by the reaction of an aromatic hydroxy compound (e.g., phenol) with CO and O₂ in the presence of a catalyst composition comprising a platinum metal catalyst {which consists of at least one metal of Group VIII such as palladium}, a quaternary salt (e.g., tetrabutylammonium bromide) and a metal co-catalyst {e.g., manganese (III) acetylacetonate}. See, for instance, Example 1 in columns 8-9. The temperature and pressure are within the scope of the instant claimed invention (column 3, lines 8-12). Further, Buysch et al. teach that it is advantageous to conduct the process under

conditions where the starting hydroxy compound is in a melt with diaryl carbonate (column 2, lines 42 through column 3, lines 16; and Examples 1-6).

Buysch et al. '445 teach a process for the production of diaryl carbonates by the reaction of an aromatic hydroxy compound (e.g., phenol) with CO and O₂ in the presence of a catalyst composition comprising a supported catalyst system containing palladium and manganese and a quaternary salt (e.g., tetrabutylammonium bromide). See, for instance, Example 1 in column 8. The temperature and pressure are within the scope of the instant claimed invention (column 2, lines 49-67; and column 3, lines 1-5). Further, Buysch et al. '445 teach dissolving a base in a phenol melt that has been diluted with a solvent (column 7, lines 9-16).

Hesse et al. teach that the preparation of diaryl carbonates by the reaction of an aromatic hydroxy compound (e.g., phenol) with CO and O₂ in the presence of a platinum metal catalyst, a cocatalyst {e.g., copper}, a quaternary salt (e.g., tetrabutylammonium bromide) and a

base (e.g., an alkali metal hydroxide) is well known in the art. See, for instance, column 1, lines 53-67; column 2, lines 1-67; and column 3, lines 1-50. The temperature (column 1, line 67; and column 2, line 1) and pressure (column 2, lines 2-3) are within the scope of the instant claimed invention.

Ascertainment of the difference between the prior art and the claims (MPEP §2141.02)

The difference between the teachings in Buysch et al. '554, Buysch et al. '445 and Hesse et al. is the order in which reactants/reagents are combined.

Finding of prima facie obviousness--rational and motivation (MPEP §2142-2413)

It has been held that merely reversing the order of steps in a multi-step process is not a patentable modification absent unexpected or unobvious results. Ex parte Rubin, 128 USPQ 440 (1959).

Although, Mizuhami et al. teach that the inside system was replaced with carbon monoxide, then with a combination of carbon monoxide and oxygen (Example 1 in column 4).

Further, Mizukami et al., or alternatively, Pressman et al. '564 teach that the process is conducted in the presence of an activating compound (e.g., a solvent that is within the scope of that taught in the instant application). In Mizukami et al., the activating solvent is a nitrile compound (column 2, lines 43-44; and column 3, lines 6-17); and in Pressman et al. '564, the activating solvent is a polyether such as diethylene glycol dimethyl ether (column 4, lines 17-46).

One skilled in the art would have been motivated to utilize the processes taught by the prior art to arrive at the instant claimed process with the expectation of obtaining diaryl carbonates. One skilled in the art would also be motivated to combine the teachings of the prior art to arrive at the instant claimed process since the various catalyst compositions are well known in the art for the production of diaryl carbonates and to provide an optimized process.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the references and modify the prior art, given the state of the art at the time the invention

was made, in order to optimize the process absent a showing of unexpected results. The instant claimed invention would have been suggested to one skilled in the art and therefore, the instant claimed invention would have been obvious to one skilled in the art.

Response to Arguments

Applicants' arguments filed September 2, 2003 have been fully considered. Applicants argue that the claims, as amended, clearly recite patentable subject matter over the cited prior art. Applicants argue that the Buysch et al. '445 discloses a "supported" catalyst for use in the preparation of diaryl carbonates and that this teaching is far removed from Applicants' claimed invention.

Applicants' arguments have been considered but have not been found persuasive. Applicants have amended the claims by stating that the "catalyst composition consisting essentially of the following and any reaction products". Applicants also use the term "comprises the steps of" in each of the amended independent claims. The use of "comprises" is

open-ended language and therefore, the claims do not exclude additional, unrecited elements or method steps found in various known processes of making diaryl carbonates.

Further, Applicants have not demonstrated, in a side-by-side comparison, that the instant claimed process has unexpected, beneficial and superior results over the teachings of the cited prior art.

For all the reasons given above, the instant claimed invention would have been suggested to one skilled in the art and therefore, the instant claimed invention would have been obvious to one skilled in the art.

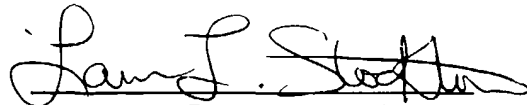
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura L. Stockton whose telephone number is (703) 308-1875. The examiner can normally be reached on Monday-Friday from 6:00 am to 2:30 pm. If the examiner is out of the Office, the examiner's supervisor, Joseph McKane, can be reached on (703) 308-4537.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-1235.

Application/Control Number: 09/822,531
Art Unit: 1626

Page 10

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

A handwritten signature in black ink, appearing to read 'Laura L. Stockton', written over a horizontal line.

Laura L. Stockton, Ph.D.

Patent Examiner

Art Unit 1626, Group 1620

Technology Center 1600

November 12, 2003